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ABSTRACT

The Study Technique Questionnaire was administered to 914 students in grades 6-8, in grades 10-12, and in undergraduate school. The students were asked to describe, in detail, their preferred study technique for a fairly long reading assignment. The responses were reliably grouped into one of nine categories: read only; read and underline; read and take notes; read, underline, and take notes; read and underline or take notes; read and underline, take notes, or outline; read and outline; read and outline or underline; and read and form mental notes. Reading only was the most popular technique for 60% of the sixth-eighth grade students, 47% of tenth through twelfth graders, and 13% of undergraduate students. Reading and underlining was the first choice of 39% of the college students. The popularity of underlining and of note taking (combined with reading) greatly increased with increasing student age. The variety of techniques described also increased for older age groups. This variety may be explained by the increased level of student participation which is demanded by the more complex reading material, or by the fact that individual aptitudes, characteristics, and habits are more firmly established in older students. (GDC)

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A NORMATIVE STUDY OF STUDENTS' PREFERRED STUDY TECHNIQUES[1]

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Teachers frequently find themselves consulted by their students for advice on how to study. However a review of the research literature on study technique effectiveness reveals a state of confusion regarding the most effective technique to use. For example, some studies (Howe, 1970; Idstein & Jenkins, 1972) have found little improvement in learning resulting from the use of underlining or note taking rather than repetitive reading, while other research (Annis & Davis, 1978; DiVesta & Gray, 1972) indicates that note takers learn more than underliners or readers only. Other studies (Fowler & Barker, 1974; Rickards & August, 1975) found some advantage for underlining but only under certain specific conditions.

There is somewhat more agreement in the literature as to the exact functions of note taking. Note taking appears to serve either one or both of two functions: an encoding function in which the material to be learned is transformed into a personally meaningful form, and an external memory function useful for later review. These functions appear to interact and to operate to differing degrees in specific situations.

Traditionally study technique research has compared one study technique against another while ignoring the suitability of the treatment for the specific characteristics of an individual student. However some recent attempts to clarify the research on study techniques have considered the effect of individual difference variables. A study by Berliner (1971), for example, investigated the effect of memory ability on learning for lecture.

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[1] Paper presented at the Annual Meetings of the American Educational Research Association, San Francisco, April, 1979.

Berliner found that when a subject is low in memory ability simply listening to the lecture results in more learning than note taking, while at high levels of memory ability note taking was markedly superior to simply listening.

Another individual difference neglected in previous research is the preference of the individual for a specific study technique. In past studies a student who preferred underlining might have been experimentally assigned to note taking or vice versa. Yet it seems likely that an individual's preference for a particular study method would influence his or her success with a given study technique.

Surprisingly enough, there is no information in the existing literature regarding the study techniques actually used by students at various grade levels. This information is important, and its absence may in part explain the conflicting results in the literature on study technique effectiveness. Thus a normative study was conducted to gather data on the study techniques actually used by students. Information was collected from students in three different age groups: middle school (grades 6-8); high school (grades 10-12); college (freshmen through senior).

A total of 914 students in three grade levels participated in the normative study. Of these 914 students, 286 were enrolled in grades 6-8, 329 were enrolled in grades 10-12, and 299 were enrolled in college. The public school students were enrolled in the schools of a midwestern city of 80,000 population. The college students were enrolled at a state university with 18,000 total enrollment.

The experimenter went into individual classes comprised of students in the above grade levels and distributed a Study Technique Questionnaire to all students. The questionnaire asked students to describe exactly how they would

go about reading a faitly long article assigned for this or any other class. Students were encouraged to write as detailed and specific a description of their preferred study technique as possible. The non-judgmental aspect of the questionnaire was stressed since the students were told it had not been established that there was one best study technique for everyone to use.

All student responses were read and classified according to which one of nine general categories of study technique they best fit. The nine categories were established by first reading all responses and then grouping responses by common characteristics. A sample of the responses was grouped independently by two raters for an obtained reliability of .93. The nine categories of obtained study technique responses were: Read Only; Read and Underline; Read and Notes; Read, Underline, and Notes; Read, Underline or Notes; Read, Underline, Notes or Outline; Read and Outline; Read, Outline or Underline; Read and Mental Notes.

A chi-square test revealed there are student grade level differences preference for study technique (χ^2 (18) = 217.7, $p < .01$). Tables 1, 2, and 3, respectively, show the study technique responses obtained for at least 5% of the students in grades 6–8, grades 10-12, and at the college level.

Read only is by far the most popular choice of 60% of the students in grades 6–8. It is still the most popular technique at grades 10-12 with 47% of the students selecting it, while at the college level it drops to fourth choice and is preferred by only 13% of the students. Underlining and/or Note Taking combined with Reading greatly increases in popularity with increasing age. In grades 10-12 Read and Underline accounts for 18% of the choices, Read and Notes for 17%, and Read, Underline, and Notes for 8%. At the college level Read, Underline, and

Notes accounts for 18% of the choices, Read and Notes for 17%, Read Only for 13%, and Read, Underline or Notes for 6%.

There are at least two explanations for the increasing number of study technique choices described by students of increasing age and for the decreasing popularity of Read Only. One explanation is that as the reading material becomes more complex as the student moves through the grades, more active involvement with the learning material such as is required by underlining and/or note taking becomes necessary. As a result of trial and error learning students may find that the more active participation in learning required by underlining and note taking results in more learning and thus in higher test scores and final grades.

According to Weener (1974) the effectiveness of both note taking and underlining is based on generally accepted principles of learning. Both study techniques require the learner to be more active than is required by reading only. Also both underlining and note taking provide an opportunity for the learner to reorganize or encode the learning material by emphasizing the material considered more important so that it can be better assimilated into their existing cognitive structure.

A second explanation is that as students grow older individual differences in aptitudes and characteristics, such as memory ability and cognitive style, become more firmly established with resulting implications for study technique effectiveness. The previously cited study by Berliner found a relationship between memory ability and the relative effectiveness of listening only or note taking. Listening only was generally more effective when memory ability was low while note taking was more affective with high memory ability. Given Berliner's findings and the evidence (Howe, 1969) that memory ability increases with age, it seems reasonable to conclude that as memory ability improves, study techniques such as note taking will be relied on more.

Other research (Annis & Davis, 1978) indicates a possible interaction of at least some aspects of study technique usage with the global-analytic dimension of cognitive style. Developmental curves during the period from 8 to 15 show a marked, continuous increase in analytic ability which begins to level off around age 15 and approaches a plateau by 24 (Witkin, Goodenough, & Karp, 1967). Thus the chronological increase in the number of study techniques found in this study may result from presently unidentified interactions between the study technique used and cognitive-style variables such as the global-analytic dimension which are rapidly differentiating between the ages of 8-24. Due to these interactions the use of specific study techniques may be reinforced by the satisfactory results obtained for some students with certain characteristics but not for others. Thus the relationship between increasing age of students and the increasing number of study techniques used, and the decreasing use of Read Only found in this study may result from the ongoing process of differentiation of individual characteristics and abilities occurring at these grade levels.

Prior to this study there was no data available on the study techniques preferred by students of various ages. This absence of information may in part explain the confused state of the literature on study technique effectiveness. Previous studies have manipulated study technique variables without knowing what methods are actually used by students.

This study indicates that Read Only is the most commonly used study technique by students in grades 6-8, but that it greatly decreases in popularity through high school and into college where it is increasingly replaced by a larger variety of study techniques involving Underlining and/or Note Taking. Possible explanations for these trends include the more active involvement and encoding required by Underlining and Note Taking and the increasing influence of individual differences. Further research is needed to uncover the basis of these age trends and the influence of individual differences on study technique effectiveness. The ultimate aim should be to determine the best study technique for an individual student facing a specific learning situation.

Table 1

Study Techniques for Students in Grades 6-8 (N=286)

Study Technique	Percentage of Responses
Read Only	60%
Read and Notes	23%
Read and Underline	10%

Table 2

Study Techniques for Students in Grades 10-12 (N=329)

Study Technique	Percentage of Responses
Read Only	47%
Read and Underline	18%
Read and Notes	17%
Read, Underline and Notes	8%

Table 3

Study Techniques for Students in College (N=299)

Study Technique	Percentage of Responses
Read and Underline	39%
Read, Underline, and Notes	18%
Read and Notes	17%
Read Only	13%
Read, Underline or Notes	6%

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